

28. A printing apparatus according to claim 27,  
wherein the recording is executed by discharging ink by  
the heat of said heat generating element.

5 29. A printing apparatus according to claim 24,  
wherein said recording execution means includes a heat  
generating element for recording.

10 30. A printing apparatus according to claim 29,  
wherein the recording is executed by discharging ink by  
the heat of said heat generating element.

15 31. A head substrate of a printing head  
detachably mounted on a printer main body, comprising:  
plural external connection terminals for  
externally entering various signals and a driving  
electric power;  
recording execution means for executing a  
recording operation according to the various signals  
20 and the driving electric power externally entered into  
said external connection terminals;  
data memory means for executing data writing and  
data readout;  
memory access means for executing the data writing  
25 into said data memory means in response to the various  
signals and the driving electric power externally  
entered into said external connection terminals and the

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data readout corresponding to the various signals; and writing inhibition means for permanently disabling the data writing into said data memory means by said memory access means.

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32. A head substrate according to claim 31,  
wherein:

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10       said writing inhibition means is adapted for cutting off an electric power wiring for supplying the driving electric power for data writing from said external connection terminals to said memory access means.

33. A head substrate according to claim 31,  
15       further comprising:

common terminal wiring means for connecting said memory access means and said recording execution means to a common external connection terminal.

20       34. A head substrate according to claim 31,  
wherein:

25       said external connection terminals receive, at one thereof, from the exterior, an access permission signal for permitting the data writing;

30       said memory access means executes data writing into said data memory means when the access permission signal is externally entered from said external

connection terminal; and

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- 5 said writing inhibition means is adapted for cutting off an electric power wiring for supplying the driving electric power for data writing from said external connection terminal to said memory access means.

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35. A head substrate according to any of claims

31 to 34, wherein:

- 10 said memory access means writes data of plural kinds in succession in said data memory means; and said writing inhibition means individually disables data overwriting for the data of the plural kinds written in succession in said data memory means 15 by said memory access means.

36. A head substrate according to any of claims

31 to 34, wherein:

- 20 said plural external connection terminals externally receive, as the various signals, a binary logic signal corresponding to whether or not to execute the recording, a recording image signal and a clock signal;

- 25 said recording execution means is adapted for executing a recording operation by externally receiving the recording image signal and the clock signal when said binary logic signal externally entered from said

external connection terminals is in a first state; and  
said memory access means is adapted for executing  
at least either of data writing into or data readout  
from said data memory means at a timing corresponding  
5 to the clock signal, when said binary logic signal  
externally entered into said external connection  
terminal is in a second state.

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10 37. A head substrate according to any of claims  
31 to 34, wherein:

said recording execution means is adapted for  
executing a recording operation based on the recording  
image signal serially entered into a specified one of  
said external connection terminals; and

15 said memory access means is adapted for writing  
data, serially entered from said specified one of said  
external connection terminals, into said data memory  
means, and serially outputting the data read from said  
data memory means to said specified one of said  
20 external connection terminals.

38. A head substrate according to any of claims  
31 to 34, wherein:

25 said recording execution means is adapted for  
executing a recording operation based on the recording  
image signal parallel entered into specified ones of  
said external connection terminals; and

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said memory access means is adapted for writing data, parallel entered from said specified plurality of said external connection terminals that parallel receive the recording image signal, into said data memory means, and for serially outputting the data, read from said data memory means, to said specified plurality of said external connection terminals that parallel receive the recording image signal.

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10        39. A head substrate according to claim 36, wherein the clock signal for executing the recording operation and the clock signal supplied to said memory access means are used in common.

15        40. A printing head detachably mounted in a printer main body, comprising a head substrate according to any of claims 31 to 34.

20        41. A printing head according to claim 40, wherein said recording execution means includes a recording element for recording.

25        42. A printing head according to claim 41, wherein said recording element is a heat generating element.

43. A printing head according to claim 42,

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wherein the recording is executed by discharging ink by  
the heat of said heat generating element.

44. A printing head detachably mounted in a  
5 printer main body, comprising a head substrate  
according to claim 36.

45. A printing head detachably mounted in a  
printer main body, comprising a head substrate  
10 according to claim 37.

46. A printing head detachably mounted in a  
printer main body, comprising a head substrate  
according to claim 38.  
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47. A printing head detachably mounted on a  
printer main body, comprising:

plural external connection terminals for  
externally entering various signals and a driving  
20 electric power;  
recording execution means for executing a  
recording operation according to the various signals  
and the driving electric power externally entered into  
said external connection terminals;

25 data memory means capable of data readout; and  
memory access means for reading data stored in  
said data memory means;

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wherein said memory access means is rendered, by writing inhibition means, permanently incapable of data writing into said data memory means.

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5        48. A printing head according to claim 47, wherein said recording execution means includes a recording element for recording.

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10      49. A printing head according to claim 48, wherein said recording element is a heat generating element.

15      50. A printing head according to claim 49, wherein the recording is executed by discharging ink by the heat of said heat generating element.

51. A method for producing a printing head detachably mounted on a printer main body, comprising:  
a step of preparing a head substrate including plural external connection terminals for externally entering various signals and a driving electric power; recording execution means for executing a recording operation according to the various signals and the driving electric power externally entered into said external connection terminals; data memory means capable of executing data writing and data readout; memory access means for executing the data writing into

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5        said data memory means in response to the various signals and the driving electric power externally entered into said external connection terminals and executing the data readout corresponding to the various signals; and writing inhibition means for permanently disabling the data writing into said data memory means by said memory access means;

10        a step of executing data writing into said data memory means by said memory access means; and

10        a writing inhibition step of permanently disabling, by said writing inhibition means after the data writing, the data writing into said data memory means by said memory access means.

15        52. A method for producing the head substrate according to claim 51, wherein:

15        said writing inhibition means is adapted for cutting off an electric power wiring for supplying the driving electric power for data writing from said 20        external connection terminals to said memory access means.

25        53. A method for producing the head substrate according to claim 51, wherein:

25        said writing inhibition means is adapted for cutting off a signal wiring for connecting said external connection terminals, externally receiving an

access permission signal for permitting the data writing, and said memory access means.

54. A method for producing the head substrate  
5 according to any of claims 51 to 53, wherein:

said data writing step writes data of plural kinds in succession in said data memory means by said memory access means; and

10 said writing inhibition step individually disables data overwriting for the data of the plural kinds written in succession in said data memory means by said memory access means.

55. A method for producing a printing head  
15 detachably mounted on a printer main body, comprising:

a step of preparing a printing head including plural external connection terminals for externally entering various signals and a driving electric power; recording execution means for executing a recording operation according to the various signals and the driving electric power externally entered into said external connection terminals; data memory means capable of executing data writing and data readout; memory access means for executing the data writing into said data memory means in response to the various signals and the driving electric power externally entered into said external connection terminals and

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executing the data readout corresponding to the various signals; and writing inhibition means for permanently disabling the data writing into said data memory means by said memory access means;

5        a step of executing data writing into said data memory means by said memory access means; and

          a writing inhibition step of permanently disabling, by said writing inhibition means after the data writing, the data writing into said data memory

10      means by said memory access means.

56. A method for producing the printing head according to claim 55, wherein:

15      said writing inhibition means is adapted for cutting off an electric power wiring for supplying the driving electric power for data writing from said external connection terminals to said memory access means.

20      57. A method for producing the head substrate according to claim 55, wherein:

          said writing inhibition means is adapted for cutting off a signal wiring for connecting said external connection terminals, externally receiving an access permission signal for permitting the data writing, and said memory access means.

58. A method for producing the printing head according to any of claims 55 to 57, wherein:
- said data writing step writes data of plural kinds in succession in said data memory means by said memory access means; and
- said writing inhibition step individually disables data overwriting for the data of the plural kinds written in succession in said data memory means by said memory access means.
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59. A printing apparatus comprising:
- a printing head according to claim 44;
- input means for individually transmitting various signals respectively to a plurality of said external connection terminals of said printing head, thereby causing said recording execution means to execute a recording operation; and
- memory readout means for transmitting various signals to said plural external connection terminal of said printing head, thereby causing said memory access means to execute the data readout.

60. A printing apparatus comprising:
- a printing head according to claim 45;
- input means for individually transmitting various signals respectively to a plurality of said external connection terminals of said printing head, thereby

causing said recording execution means to execute a recording operation; and

memory readout means for transmitting various signals to said plural external connection terminals of said printing head, thereby causing said memory access means to execute the data readout.

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61. A printing apparatus comprising:

a printing head according to claim 46;

10 input means for individually transmitting various signals respectively to a plurality of said external connection terminals of said printing head, thereby causing said recording execution means to execute a recording operation; and

15 memory readout means for transmitting various signals to said plural external connection terminals of said printing head, thereby causing said memory access means to execute the data readout.

20 62. A printing apparatus comprising:

a printing head according to claim 44;

wherein said recording input means is adapted for individually transmitting a binary logic signal of a second state and various signals such as a recording image signal and a recording clock signal respectively to a plurality of said external connection terminals of said printing head; and

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said memory readout means is adapted for transmitting the binary logic signal of the second state and the memory clock signal, etc. to the plurality of said external connection terminals of said printing head.

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63. A printing apparatus comprising:

a printing head according to claim 45;  
wherein said recording input means is adapted for  
10 serially transmitting the recording image signal to a specified one of said external connection terminals of said printing head; and

said memory readout means is adapted for serially receiving the data read by said memory access means,  
15 from the specified one of said external connection terminals that serially receives the recording image signal.

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64. A printing apparatus comprising:

a printing head according to claim 46;  
wherein said recording input means is adapted for parallel transmission of the recording image signal to a specified plurality of said external connection terminals; and

25 said memory readout means is adapted for parallel reception of the data read by said memory access means, from the specified plurality of said external

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connection terminals that receives in parallel the recording image signal.

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65. A printing apparatus comprising:

5 a printing head according to claim 47; and  
means for driving said printing head.

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66. A printing apparatus according to claim 65,  
wherein said recording execution means includes a  
10 recording element for recording.

67. A printing apparatus according to claim 66,  
wherein recording element is a head generating element  
and ink is discharged by the heat generated by said  
15 heat generating element.

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